



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,068	11/07/2001	Kenji Takubo	011314	4716

38834 7590 09/14/2006

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER

YE, LIN

ART UNIT PAPER NUMBER

2622

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/986,068	TAKUBO, KENJI	
	Examiner	Art Unit	
	Lin Ye	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/28/2006 have been fully considered but they are not persuasive as to claims 1-3 and 5-10.

For claim 1, the applicant argues that references of applicant's admitted Prior Art, Takahashi et al. Japan Publication 64-030261 and Tanigawa Japan Publication 03-227063 individually. The applicant argues that the Takahashi and Tanigawa references do not have the accumulating pixels, because neither Takahashi nor Tanigawa relates to a high-speed imaging device

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The applicant's admitted Prior Art, Takahashi et al. Japan Publication 64-030261 and Tanigawa Japan Publication 03-227063 are all teach solid state imaging device art.

The applicant's admitted Prior Art discloses in Figures 2-3, a **high speed solid state imaging device** (FT CCD) comprising: a plurality of two-dimensionally arrayed light receiving pixels which generate electrical charges according to the incident light (See page 1, lines 10-17); at least two accumulating pixels (accumulating pixels 23a-d, see page 3, lines 14-15) for each of the light receiving pixels (8) for accumulating the electrical charges (see page 3, line 25 and page 4, lines 1-6); a transfer path (vertical transfer path 24) provided for

each of a set of the accumulating pixels corresponding to a light receiving pixel for transferring the electrical charges temporarily accumulated in the accumulating pixels as shown in Figure 2 (See page 3, lines 11-24 and page 8, lines 5-17); a light shield (6, see Figure 3 and page 5, line 1-5) for shutting off light entering the accumulating pixels and the transfer paths (24) having an aperture at each of the light receiving pixels.

The only reason for combing the Takahashi and Tanigawa references with applicant's admitted Prior Art is for evidence that it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the solid state imaging device of the applicant's admitted Prior Art by providing an opaque cover having a low reflectivity and laid over the light shield with an aperture at each of the light receiving pixels, wherein the opaque cover extends into the aperture of the light shield and forms an **eave on** the edge of the aperture of the light shield.

The Takahashi ('261) reference teaches in Figure 1, a solid state imaging device comprising: a cover glass (a color filters 3 side of cover glass 4, see page 3, lines 7-8) for covering the light receiving pixels (2b) and the accumulating pixels (the sections of CCD chip 2 are under light shielding section 2a); light shield (light shielding section 2a) placed under the cover glass for shutting off light entering the accumulating pixels and having an aperture at each of the light receiving pixels (2b); an opaque cover (a low reflective face 2C) having a low reflectivity and laid over the light shield and beneath the cover glass with an aperture at each of the light receiving pixels so that a reflection from the cover glass is reduced (e.g., 2C decrease the multiply reflecting light between the filter 3 side of the cover glass 4 and the light shield 2a or the light from outside as shown in Figure 4, see the

translation of the Takahashi reference page 9, lines 3-24 and Figure 1). The Takahashi ('261) reference is evidenced that one of ordinary skill in the art at the time to see more advantages for the solid state imaging device comprises a low reflective cover laid over the light shield layer, so that the result images are produced wherein it has good color reproducibility, high resolution and high contrast (See page 9, lines 23-24). For that reason, it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the solid state imaging device of the applicant's admitted Prior Art by providing an opaque cover having a low reflectivity and laid over the light shield and beneath the cover glass with an aperture at each of the light receiving pixels as taught by Takahashi ('261).

The Tanigawa ('063) reference teaches in Figure 1, a solid state imaging device comprising: a light shield (polysilicon electrode 3) for preventing light from entering the accumulating pixels (elements 8 and 9) and having an aperture at each of the light receiving pixels (elements 7); and an opaque cover (low reflective film 10) having a low reflectivity and laid over the light shield with an aperture at each of the light receiving pixels, wherein the opaque cover (10) extends into the aperture of the light shield (3) and forms an eave on the edge of the aperture of the light shield (See the copy of full English translation of Tanigawa reference). The Tanigawa ('063) reference is evidenced that one of ordinary skill in the art at the time to see more advantages for the opaque cover extends into the aperture of the light shield and forms an **eave on** the edge of the aperture of the light shield so that completely preventing light rays for photographing from being directly incident on the charge transfer element. For that reason, it would have been obvious one having ordinary

skill in the art at the time of the invention was made to modify the solid state imaging device of the applicant's admitted Prior Art by providing the opaque cover extends into the aperture of the light shield and forms an **eave on** the edge of the aperture of the light shield as taught by Tanigawa ('063).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted Prior Art in view of Takahashi et al. Japan Publication 64-030261 and Tanigawa Japan Publication 03-227063.

Referring to claim 1, the applicant's admitted Prior Art discloses in Figures 2-3, a high speed solid state imaging device (FT CCD) comprising: a plurality of two-dimensionally arrayed light receiving pixels which generate electrical charges according to the incident light (See page 1, lines 10-17); at least two accumulating pixels (accumulating pixels 23a-d, see page 3, lines 14-15) for each of the light receiving pixels (8) for accumulating the electrical charges (see page 3, line 25 and page 4, lines 1-6); a transfer path (vertical transfer path 24) provided for each of a set of the accumulating pixels corresponding to a light receiving pixel

for transferring the electrical charges temporarily accumulated in the accumulating pixels as shown in Figure 2 (See page 3, lines 11-24 and page 8, lines 5-17); a light shield (6, see Figure 3 and page 5, line 1-5) for shutting off light entering the accumulating pixels and the transfer paths (24) having an aperture at each of the light receiving pixels. However, the applicant's admitted Prior Art does not explicitly show an opaque cover having a low reflectivity and laid over the light shield with an aperture at each of the light receiving pixels, and the opaque cover extends into the aperture of the light shield and forms an eave on the edge of the aperture of the light shield.

The Takahashi ('261) reference teaches in Figure 1, a solid state imaging device comprising: a cover glass (a color filters 3 side of cover glass 4, see page 3, lines 7-8) for covering the light receiving pixels (2b) and the accumulating pixels (the sections of CCD chip 2 are under light shielding section 2a); light shield (light shielding section 2a) placed under the cover glass for shutting off light entering the accumulating pixels and having an aperture at each of the light receiving pixels (2b); an opaque cover (a low reflective face 2C) having a low reflectivity and laid over the light shield and beneath the cover glass with an aperture at each of the light receiving pixels so that a reflection from the cover glass is reduced (e.g., 2C decrease the multiply reflecting light between the filter 3 side of the cover glass 4 and the light shield 2a or the light from outside as shown in Figure 4, see the translation of the Takahashi reference page 9, lines 3-24 and Figure 1). The Takahashi ('261) reference is evidenced that one of ordinary skill in the art at the time to see more advantages for the solid state imaging device comprises a low reflective cover laid over the light shield layer, so that the result images are produced wherein it has good color

reproducibility, high resolution and high contrast (See page 9, lines 23-24). For that reason, it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the solid state imaging device of the applicant's admitted Prior Art by providing an opaque cover having a low reflectivity and laid over the light shield with an aperture at each of the light receiving pixels as taught by Takahashi ('261).

The applicant's admitted Prior Art and Takahashi reference do not explicitly show that wherein the opaque cover extends into the aperture of the light shield and forms an **eave on** the edge of the aperture of the light shield.

The Tanigawa ('063) reference teaches in Figure 1, a solid state imaging device comprising: a light shield (polysilicon electrode 3) for preventing light from entering the accumulating pixels (elements 8 and 9) and having an aperture at each of the light receiving pixels (elements 7); and an opaque cover (low reflective film 10) having a low reflectivity and laid over the light shield with an aperture at each of the light receiving pixels, wherein the opaque cover (10) extends into the aperture of the light shield (3) and forms an eave on the edge of the aperture of the light shield (See the copy of full English translation of Tanigawa reference). The Tanigawa ('063) reference is evidenced that one of ordinary skill in the art at the time to see more advantages for the opaque cover extends into the aperture of the light shield and forms an **eave on** the edge of the aperture of the light shield so that completely preventing light rays for photographing from being directly incident on the charge transfer element. For that reason, it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the solid state imaging device of the applicant's admitted Prior Art by providing the opaque cover extends into the aperture

of the light shield and forms an **eave on** the edge of the aperture of the light shield as taught by Tanigawa ('063).

Referring to claim 2, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 1, and the Takahashi ('261) reference discloses the opaque layer (2C) further has a low transmissivity with respect to the incident light (a black Alumite material, see the translation of the Takahashi reference page 9, lines 3-10 and Figure 1).

Referring to claim 5, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 1, and the applicant's admitted Prior Art discloses wherein the solid state-imaging device is an FT-type CCD (See the applicant's specification, page 2, lines 15-16).

Referring to claim 6, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 1, and the applicant's admitted Prior Art discloses wherein the solid state-imaging device is an IT-type CCD (See the applicant's specification, page 2, lines 15-16).

Referring to claim 7, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 1, and the applicant's admitted Prior Art discloses wherein the solid state-imaging device is an FIT-type CCD (See the applicant's specification, page 2, lines 15-16).

Referring to claim 8, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 5, and the Takahashi ('261) reference discloses wherein the opaque cover (2c) is made of the same

Art Unit: 2622

material as that used in the black layer (a black Alumite treatment) for the filter array of a normal CCD (CCD chip 2 covered by a color mosaic filter array 3, see the translation of the Takahashi reference page 9, lines 11-24 and Figure 1).

Referring to claim 9, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 6, and the Takahashi ('261) reference discloses wherein the opaque cover (2c) is made of the same material as that used in the black layer (a black Alumite treatment) for the filter array of a normal CCD (CCD chip 2 covered by a color mosaic filter array 3, see the translation of the Takahashi reference page 9, lines 11-24 and Figure 1).

Referring to claim 10, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 7, and the Takahashi ('261) reference discloses wherein the opaque cover (2c) is made of the same material as that used in the black layer (a black Alumite treatment) for the filter array of a normal CCD (CCD chip 2 covered by a color mosaic filter array 3, see the translation of the Takahashi reference page 9, lines 11-24 and Figure 1).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted Prior Art in view of Takahashi et al. Japan Publication 64-030261, Tanigawa Japan Publication 03-227063 and Murakami Japan Publication 10-150179.

Referring to claim 3, the applicant's admitted Prior Art, Takahashi ('261) and Tanigawa ('063) references disclose all subject matter as discussed in respected claim 1; and the applicant's admitted Prior Art discloses a protective layer (7), see the applicant's specification, page 5, lines 4-5) laid over the light shield (6). When an opaque cover (a low

reflective face 2C) of the Takahashi ('261) is provided in the applicant's admitted Prior Art, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to see when combining the teaching of Takahashi reference into the applicant's admitted Prior Art to place the protective layer laid between the light shield and the opaque cover (anti-reflection layer). This is further evidenced by the teaching of Murakami ('179) reference.

In particular, the Murakami ('179) reference teaches in Figure 1, a solid-state image-sensing device (CCD) comprises a protective layer (a covering film 19 with a transparence resin layer 22) is laid between the light shield (light-shielding film 18) and the anti-reflection layer (aluminum fluoride anti-reflection layer 26, see description of Murakami reference, [0020]-[0021]). The Murakami ('179) reference is evidenced that one of ordinary skill in the art at the time to see more advantages for the solid state imaging device comprising a protective layer laid between the light shield and anti-reflection layer, so that the CCD device is kept free from flares and ghosts effected by reflection of incident light and capable of dispensing with high hermetic sealing and protection (See Abstraction section of the Murakami reference). For that reason, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the solid state-imaging device of the applicant's admitted Prior Art by providing the protective layer laid between the light shield and the opaque cover (anti-reflection layer) as taught by Murakami ('179)

Conclusion

5. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin Ye whose telephone number is (571) 272-7372. The examiner can normally be reached on Mon-Fri 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2622

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Lin Ye', with a long horizontal flourish extending to the right.

Lin Ye
Primary Examiner
Art Unit 2622

September 11, 2006